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THE EFFECT OF A GROUP OF SOCIAL STIMULI UPON ATTITUDES¹

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INTRODUCTION

In this series of experimental studies, an attempt has been made to find the effect of a group of social stimuli upon attitudes. One thousand two hundred thirty-six junior high school students and college freshmen in Waco, Texas, served as subjects for these experiments. The Peterson-Thurstone scale on *Attitude Toward War* and the Smith-Thurstone scale on *Attitude Toward Prohibition*, Forms A and B were used for test and retest. The social stimuli consisted of lectures, stories and chalk talks. All stimuli in a series were presented on one side of the issue. Briefly, the procedure has been to measure the attitudes of a group of students by means of an attitude scale, then to present a stimulus which might affect the attitudes on the issue in question, and, on the following day, to measure again the attitudes of the students; a week later to present another stimulus on the same side of the issue as before, following this the next day with another form of the attitude scale; again a week later to present a third stimulus on the same side of the issue, following it the next day with the fourth presentation of the scale. Since there were only two forms of the scales available, it was necessary to present each of the forms twice.

The experimental groups consisted of two eighth grade groups in junior high school (the two schools being located in different sections of the city), one seventh grade group, and one college freshman group. The control group was composed of ninth grade high school students. The schools from which all these groups were selected are located in Waco, Texas—a city of approximately sixty thousand population.

PROCEDURE AND RESULTS

The experiments on the control group will be reported first, since the two forms of the scale on *Attitude Toward War* were found not

¹ The essential portion of a dissertation presented to the Department of Psychology of the University of Chicago in candidacy for the degree of Doctor of Philosophy.

comparable. This condition made necessary certain corrections throughout the study.

At the beginning of each experiment, the students were informed as to the number of times they would be asked to mark the scale. This was done in order to prevent dissatisfaction when the scale was presented several times.

Each Thursday, beginning the first week in April, and running for four consecutive weeks, the attitude scale, *Attitude Toward War* was presented to over two hundred ninth grade students in the Waco Senior High School. However, only one hundred eighty students remained throughout the entire experiment, and only these were included in this study. The first week, Form A of the scale was given, the second week Form B, the third week Form A, and the fourth week Form B. No social stimuli were given to this group.

The statistical facts about the frequency distributions of the control group after the corrections referred to above are as follows:

TABLE I.—SHOWING MEANS, STANDARD DEVIATIONS, PROBABLE ERRORS OF MEANS, AND CORRELATIONS, TOGETHER WITH DIFFERENCES BETWEEN MEANS, AND THE RATIO OF THE DIFFERENCES TO THEIR PROBABLE ERRORS
Waco Senior High School—Control Group

$M_1 = 4.653$	$D_{M_1-M_2} = -.085$	$PE_{M_1} = .059$	$r_{12} = .88$
$M_2 = 4.738$	$D_{M_2-M_3} = .005$	$PE_{M_2} = .055$	$r_{34} = .86$
$M_3 = 4.733$	$D_{M_3-M_4} = .050$	$PE_{M_3} = .064$	$r_{23} = .87$
$M_4 = 4.683$	$D_{M_1-M_4} = -.030$	$PE_{M_4} = .061$	
$\sigma_1 = 1.19$	$PE_{D_2} = .028$	$D/PE_{D_{12}} = 3.04$	$n = 180$
$\sigma_2 = 1.13$	$PE_{D_{23}} = .032$	$D/PE_{D_{23}} = .16$	
$\sigma_3 = 1.29$	$PE_{D_{34}} = .033$	$D/PE_{D_{34}} = 1.52$	
$\sigma_4 = 1.23$	$PE_{D_{14}} = .031$	$D/PE_{D_{14}} = .97$	

From the above table, it is seen that the ratio of the difference to the probable error of the difference in each instance is too small to be statistically reliable, showing that there was no significant change in the attitudes of the group over the period of testing.

In the experimental group, two of the experiments were conducted simultaneously in February, 1933, with eighth grade students. One of the groups was at the South Junior High School, the other at the West Junior High School. A definite schedule of procedure was followed in each school, allowing a lapse of a week between the successive presentations of both the scales and the stimuli.

The first stimulus was presented by means of a lecture. The lecturer¹ used appeals both to reason and emotion. In substance the same lecture was given at the two schools, except for the inclusion at South Junior of two emotional stories which tended to glorify war.

The second stimulus, a pacifistic story by another speaker,² contained elements of reason, with much that was emotional in its appeal for peace.

The last stimulus at South Junior was a chalk talk by a third speaker.³ This speaker brought out facts about the cost of war in money and lives, and also stressed the profit-making motive.

Just before the presentation of this chalk talk, the play *The Valiant* was given in the school auditorium—a play strongly emphasizing the glory of dying for one's country. The scale given the following day showed some change in attitude toward peace, but the movement on the scale was very small.

On the day for giving the third stimulus to the West Junior group, this speaker was not available, and the experimenter was forced to present the stimulus. This was done by showing in tableau form how little is gained when two boys fight over an object claimed by both. Emphasis was placed on the cost of war, some paying with their lives, others with their money, for years after the war is over.

TABLE II.—SHOWING MEANS, STANDARD DEVIATIONS, PROBABLE ERRORS OF MEANS, AND CORRELATIONS, TOGETHER WITH DIFFERENCES BETWEEN MEANS, AND THE RATIO OF THE DIFFERENCES TO THEIR PROBABLE ERRORS
South Junior High School—Eighth Grade

M_1 before $S = 4.742$	$D_{M_1-M_2} = .065$	$PE_{M_1} = .049$	$r_{12} = .838$
M_2 after $S_1 = 4.677$	$D_{M_2-M_3} = .275$	$PE_{M_2} = .048$	$r_{23} = .835$
M_3 after $S_2 = 4.402$	$D_{M_3-M_4} = .168$	$PE_{M_3} = .053$	$r_{34} = .90$
M_4 after $S_3 = 4.234$	$D_{M_1-M_4} = .508$	$PE_{M_4} = .051$	$r_{14} = .88$
$\sigma_1 = 1.15$	$PE_{D_{12}} = .028$	$D/PE_{D_{12}} = 2.32$	$n = 247$
$\sigma_2 = 1.13$	$PE_{D_{23}} = .029$	$D/PE_{D_{23}} = 9.48$	
$\sigma_3 = 1.25$	$PE_{D_{34}} = .023$	$D/PE_{D_{34}} = 7.30$	
$\sigma_4 = 1.21$	$PE_{D_{14}} = .025$	$D/PE_{D_{14}} = 20.32$	

In all the frequency tables in this study on *Attitude Toward War*, the scores of Form B have been made equivalent to Form A. Also,

¹ Mrs. J. M. Dawson.

² Miss Lois Shaw.

³ Mrs. George Miller.

a low score indicates an attitude favorable to peace. Statistical facts about the frequency distributions of these two groups are shown in Tables II and III.

TABLE III.—SHOWING MEANS, STANDARD DEVIATIONS, PROBABLE ERRORS OF MEANS, AND CORRELATIONS, TOGETHER WITH DIFFERENCES BETWEEN MEANS, AND THE RATIO OF THE DIFFERENCES TO THEIR PROBABLE ERRORS
West Junior High School—Eighth Grade

M_1 before $S = 4.698$	$D_{M_1-M_2} = .757$	$PE_{M_1} = .047$	$r_{12} = .85$
M_2 after $S_1 = 3.941$	$D_{M_2-M_3} = .091$	$PE_{M_2} = .041$	$r_{23} = .89$
M_3 after $S_2 = 3.850$	$D_{M_3-M_4} = .865$	$PE_{M_3} = .049$	$r_{34} = .80$
M_4 after $S_3 = 2.985$	$D_{M_1-M_4} = 1.713$	$PE_{M_4} = .017$	$r_{14} = .67$
$\sigma_1 = 1.19$	$PE_{D_{12}} = .024$	$D/PE_{D_{12}} = 31.54$	$n = 291$
$\sigma_2 = 1.05$	$PE_{D_{23}} = .022$	$D/PE_{D_{23}} = 4.14$	
$\sigma_3 = 1.25$	$PE_{D_{34}} = .035$	$D/PE_{D_{34}} = 24.71$	
$\sigma_4 = .45$	$PE_{D_{14}} = .037$	$D/PE_{D_{14}} = 46.30$	

In the South Junior group, as seen from the above table, the conclusion that the three social stimuli made the students more favorable toward peace seems justified. The effect from all stimuli is cumulative, and one strong stimulus does not have the effect of several successive stimuli, though counterbalancing stimuli have their effect.

In the West Junior group, the same cumulative effect of the three stimuli is seen, with a much more decided change in attitude than was found in the South Junior group and a more consistent lowering of the mean score with the presentation of the successive stimuli.

This difference in the effect on the two groups is noted particularly following the first and third stimuli. As noted above, the first lecture to the two groups was the same, except the inclusion in the address to the South Junior group of two emotional stories which tended to glorify war. These stories constituted a conflicting element in the stimulus that largely offset the speaker's arguments for peace, and the movement on the scale as a result of this stimulus was too small to be statistically reliable. The play presented immediately preceding the third stimulus to this same group, as noted above, also largely offset the third speaker's arguments against war, and the resulting movement on the scale was very small. The second stimulus, which had no such counteracting elements, showed a more decided change toward peace. On the whole, the South Junior group did not show a decided change in attitude, but the conflicting stimuli no doubt kept

this group within one scale step of the first mean score. This group, we might say, served as a sort of control, the conflicting stimuli preventing any very great change in attitude.

In the West Junior group, where the conditions were more perfectly controlled, there was a decided movement on the scale toward peace with the presentation of each stimulus. In this group the movement on the scale may be interpreted as a change in attitude toward war from neutrality or near neutrality to strong opposition to war, the mean score being used for this interpretation. This group also became more homogeneous after the presentation of each stimulus, as indicated by the standard deviations.

An attitude scale which will show changes in the direction of a given stimulus, and then again will show little or no change when conflicting stimuli are given, may be said to be a valid scale for measuring attitudes. The control group at the Senior High School leads to the same conclusion, as there was no significant change in attitudes where no social stimuli were presented.

TABLE IV.—SHOWING MEANS, STANDARD DEVIATIONS, PROBABLE ERRORS OF MEANS, AND CORRELATIONS, TOGETHER WITH DIFFERENCES BETWEEN MEANS, AND THE RATIO OF THE DIFFERENCES TO THEIR PROBABLE ERRORS
West Junior High School—Seventh Grade

M_1 before $S = 4.724$	$D_{M_1-M_2} = .976$	$PE_{M_1} = .040$	$r_{12} = .82$
M_2 after $S_1 = 3.748$	$D_{M_2-M_3} = .561$	$PE_{M_2} = .031$	$r_{23} = .72$
M_3 after $S_2 = 3.187$	$D_{M_3-M_4} = .253$	$PE_{M_3} = .020$	$r_{34} = .61$
M_4 after $S_3 = 2.934$	$D_{M_1-M_4} = 1.790$	$PE_{M_4} = .022$	$r_{14} = .71$
$\sigma_1 = 1.02$	$PE_{D_{12}} = .022$	$D/PE_{D_{12}} = 44.36$	$n = 290$
$\sigma_2 = .81$	$PE_{D_{23}} = .021$	$D/PE_{D_{23}} = 26.71$	
$\sigma_3 = .53$	$PE_{D_{34}} = .018$	$D/PE_{D_{34}} = 14.05$	
$\sigma_4 = .57$	$PE_{D_{14}} = .028$	$D/PE_{D_{14}} = 63.92$	

Following these two experiments with eighth grade groups, another experiment was undertaken with the seventh grade group of West Junior High School, beginning the first week in April, 1933. The same schedule and procedure were followed as in the former experiments, using the same scale on *Attitude Toward War*. Two stimuli used in the former experiment with the West Junior eighth grade were used in this one—the story and the experimenter's talk—the former verbatim, the latter practically so. It was necessary to secure a

different speaker¹ to present the first stimulus, as the former speaker was not available at this time.

This speaker's manner of presentation was one of the factors in the strength of his lecture. He called attention to the causes of war, stressing greed and covetousness. He pointed out the utter uselessness of war as seen from its results, and clearly presented the possibility of settlement of all difficulties by arbitration.

The statistical facts about the frequency distributions of this group are shown in Table IV.

The above table shows that these students were moved decidedly in their attitudes toward peace by the presentation of the three social stimuli. The first stimulus shows the greatest movement on the scale, but the other two reveal an added movement toward pacifism. The movement on the scale in this group may be interpreted like that of the West Junior eighth grade—as a change in attitude toward war from neutrality or near neutrality to strong opposition. This group also shows growing homogeneity after the presentation of the successive stimuli. The ages of these junior high school students may have made them more susceptible to the stimuli, though this is not conclusive from these experiments.

During the first week in April, 1933, an experiment was begun with the freshman class of Baylor University. A group of about two hundred and fifty began, but only two hundred twenty-eight remained throughout the experiment. The Smith-Thurstone scale on *Attitude Toward Prohibition*, Forms *A* and *B* were used in this experiment. The stimuli presented were favorable to prohibition.

On Wednesday of the first week in April, Form *A* of this scale was given to the group. The following Tuesday, the president of the university² gave a lecture on prohibition to the entire student body in chapel, making a strong appeal in favor of prohibition. On the following day, when only the freshmen attended chapel, Form *B* of the prohibition scale was given.

The second stimulus was given during the following week by a group of students under the direction of one of the student leaders.³ In the group was a law student,⁴ a pre-medical student,⁵ and a min-

¹ Mr. Caso March.

² Hon. Pat M. Neff.

³ Mr. William Stone.

⁴ Mr. Caso March.

⁵ Mr. William Bird.

isterial student.¹ The students were known prohibitionists on the campus and were respected for their views, though many did not agree with them. Each made an appeal from his particular standpoint. This stimulus was followed by the second presentation of Form A of the scale.

At this time the prohibition question was a political issue. Following the series of speeches by members of the student body, the anti-prohibitionists on the campus became active, and the experimenter decided it best not to present a third stimulus.

On this scale, a high score represents an attitude favorable to prohibition. The statistical facts about the frequency distributions of this group are shown in the following table:

TABLE V.—SHOWING MEANS, STANDARD DEVIATIONS, PROBABLE ERRORS OF MEANS, AND CORRELATIONS, TOGETHER WITH DIFFERENCES BETWEEN MEANS, AND THE RATIO OF THE DIFFERENCES TO THEIR PROBABLE ERRORS
Baylor Freshmen

M_1 before $S = 5.798$	$DM_2-M_1 = .797$	$PE_{M_1} = .079$	$r_{12} = .90$
M_2 after $S_1 = 6.595$	$DM_3-M_2 = .552$	$PE_{M_2} = .072$	$r_{23} = .91$
M_3 after $S_2 = 7.147$	$DM_3-M_1 = 1.349$	$PE_{M_3} = .068$	$r_{13} = .90$
$\sigma_1 = 1.78$	$PE_{D_{12}} = .034$	$D/PE_{D_{12}} = 23.44$	$n = 228$
$\sigma_2 = 1.62$	$PE_{D_{23}} = .029$	$D/PE_{D_{23}} = 19.04$	
$\sigma_3 = 1.54$	$PE_{D_{13}} = .034$	$D/PE_{D_{13}} = 39.68$	

As seen from the table, the attitudes of the students considered as a group were changed significantly toward prohibition. The effect of the three stimuli is cumulative, as was true in the other experiments, and the same trend is shown as in the other groups. At the time of this experiment, prohibition had become somewhat unpopular among the masses. However, the scores revealed that the stimuli were effective in modifying the attitudes of the students. The mean score in the beginning indicated an attitude of indifference toward prohibition. After the two stimuli, they were at least mildly favorable, almost reaching the scale value indicating "strongly favorable" to prohibition.

This group did not become as homogeneous as the former groups after being presented with the stimuli on peace. This fact can be observed from the standard deviations and the range. The standard deviation changes but little.

¹ Mr. Leon Gorsline.

CONCLUSIONS

From the experiments reported in this paper, the cumulative effect of a group of stimuli upon an attitude has been demonstrated. The general plan of the experiment was to measure the attitudes of a group of subjects by means of an attitude scale, then to present a group of social stimuli which had been judged as having affective value on the issue in question, the attitudes of the subjects being measured before and after the presentation of each stimulus. The experimenter arbitrarily limited to three the number of stimuli to be used. The social stimuli were of a lecture or story type. An interval of one week was allowed between the presentation of each scale and the succeeding one; also an interval of a week elapsed between the presentation of the successive stimuli.

The issues studied were those of war and prohibition. The scale on *Attitude Toward Prohibition* was used only in Baylor University; because of the political issues involved, it was not deemed wise to use it in the public schools. Instead, the scale on *Attitude Toward War* was used there. On this scale, the stimuli which were presented were pacifistic in nature. Two of the groups showed a decided change toward pacifism after the presentation of the three stimuli.

The college group did not show so much change in attitude as did the high school groups. This might be due to the fact that they were older and more sophisticated, and that their attitudes were set and not so easily changed. Or it might be that the issue under consideration in the college group is one on which more firmly fixed convictions are held.

The findings in this experiment are in keeping with Peterson and Thurstone's findings in regard to the motion pictures: *viz.*, that a combination of two pictures on the same issue, neither of which has a measurable effect, may show a significant change in attitude toward the issue in question.

